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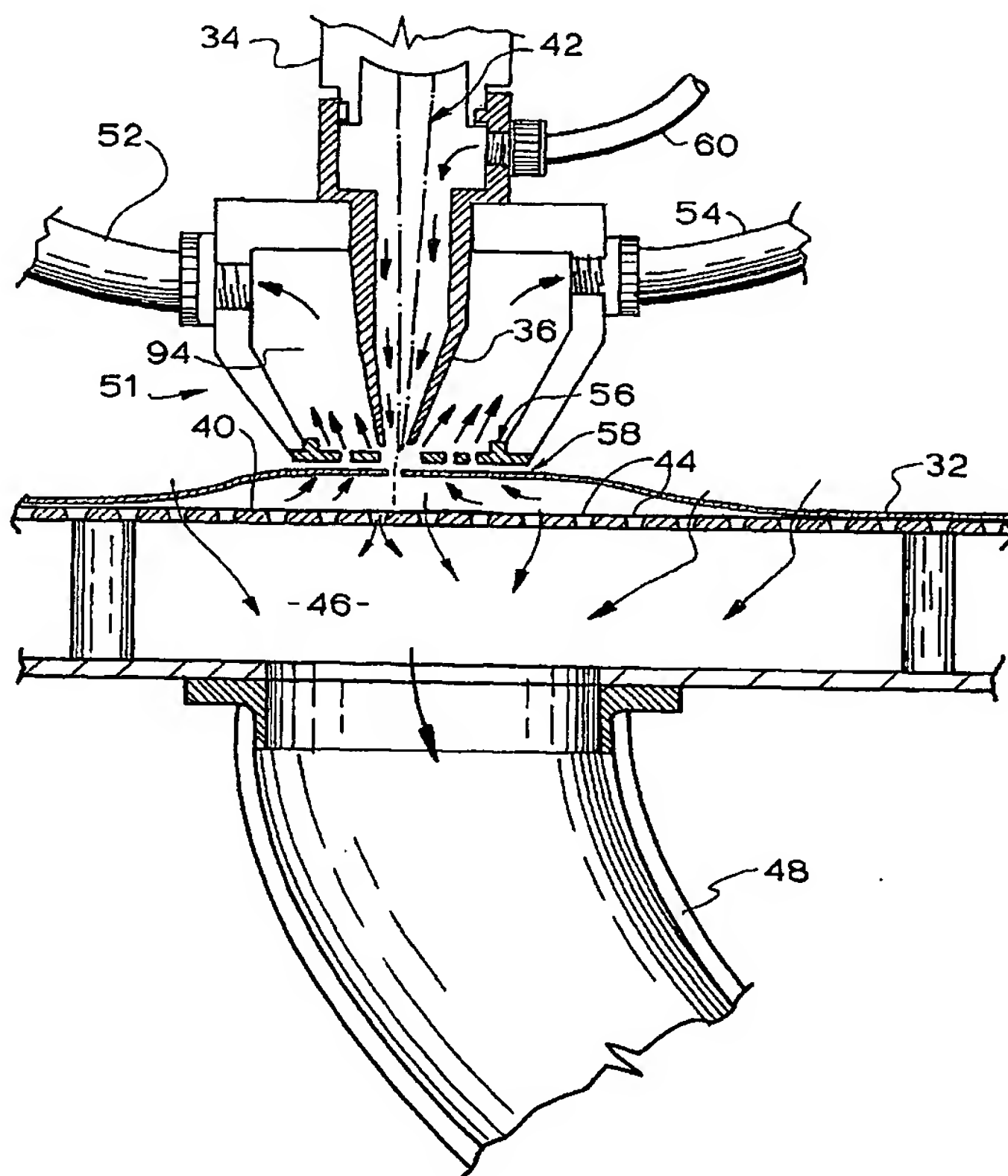
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(54) Title: A LASER CUTTING APPARATUS



(57) Abstract: A laser cutting apparatus (10) is provided for cutting sheet materials. The apparatus (10) includes a table bed (12) having a perforated top surface (40) for a sheet material (32) to be positioned thereon, a gantry (64) extending across the bed and arranged to travel in along the bed, and a carriage (62) arranged to travel along the gantry. The bed has a holding arrangement (46 and 48) for holding the sheet material in position on said bed. The carriage has a laser head (30) with a laser nozzle (36) and is arranged to receive a laser source (32) and to direct a laser beam (42) through the nozzle and towards the bed for cutting the sheet material. An enclosure member (52) having a first low pressure chamber (94) therein is arranged about the laser nozzle. The first chamber has a suction opening beneath the laser nozzle for entraining substantial by-products produced during cutting of the sheet material into the first chamber and for causing a part of the sheet material under the suction opening to be lifted off the top surface. A self cleaning cover (96) with spaced apertures (106) can be rotatably mounted on the enclosure member for removing by-products caught in the selected aperture (106). The carriage may have profiled crease wheels (48,50) for forming crease lines of limited depth into the sheet material. The gantry may have a gripping device (70) arranged to initially lift a small area of a leading edge of the sheet material and then progressively lift other areas of the leading edge onto its lower plate.

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